Phase I Archaeological Testing

Braundera YMCA Facility
O.P. Schnabel Park
San Antonio. Texas 78205

January 20, 2003

FGS Control # FGS-E08120

Prepared exclusively for

Marmon Mok Architecture 700 N. St. Mary's Street, Suite 1600 San Antonio, Texas 78205

Frost Geosciences

Geologic and Environmental Consulting

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January 20, 2008

Marmon Mok Architecture 700 N. St. Mary's Street, Suite 1600 San Antonio, Texas 78205

Attn: Mr. Shawn Bacon

Geologic and Environmental Consulting

Phase I Archaeological Testing Re:

> Braundera YMCA Facility O.P. Schnabel Park

San Antonio, Texas 78205

Frost GeoSciences, Inc. Control # FGS-E08120

Dear Mr. Bacon:

Frost GeoSciences, Inc. in conjunction with Abasolo Archaeological Consultants have completed the Phase I Archaeological Testing at the above referenced project site. The results of our investigations have been combined and are provided in the following report.

If you have any questions regarding this report, or if Frost GeoSciences, Inc. may be of additional assistance to you on this project, please feel free to call our office. It has been a pleasure to work with you and we wish to thank you for the opportunity to be of service to you on this project. We look forward to being of continued service.

Brian Culver

Project Manager

B. Culver

Sincerely, Frost GeoSciences, Inc.

TOMAS HERNANDEZ, JR GEOLOGY

Tomas Hernandez, Jr. P.G.

Project Geologist



Restricted Cultural Information

According to the Texas Administrative Code: TITLE 13: CULTURAL RESOURCES, PART 2, TEXAS HISTORICAL COMMISSION, CHAPTER 24, RESTRICTED CULTURAL RESOURCE INFORMATION, RULE §24.3 Scope: "The intent of these rules is to restrict access to specific cultural resource data to those individuals that have a legitimate scientific or legal interest in obtaining and using that information. The intent is not to limit the public's use of all information that the commission has within its libraries, files, documents, and the THSA database; however, as provided for in §442.007(f) of the Texas Government Code, and §191.004(a-c) of the Texas Natural Resources Code, the commission can determine what cultural resource information is sensitive and what information needs to be restricted due to potential dangers to those resources. The cultural resources that the commission considers to be at risk include Archaeological sites, shipwrecks, certain historic structures and engineering features. Public disclosure of any information relating to the location or character of these resources would increase their risk of harm, theft or destruction. Therefore, this information is defined as restricted and is not subject to public disclosure under state law. Restrictions on who can obtain data and how the data are used is within the legal authority of the commission, and can be defined through the rule-making authority of the commission."

As a result, it must be noted that the information contained within this report cannot be made available to the general public and additional copies of this report and the attached maps are not permissible without the written consent of Frost GeoSciences, Inc. and Abasolo Archaeological Consultants.

Site Location

The address of the Site is 9606 Bandera Road and is the location of the Braundera YMCA facility. The Site is located within the City of San Antonio Parks Department's O.P. Schnabel Park. According to the information provided by Marmon Mok Architecture the Site is located at N29° 32′ 5.48″ Latitude and W98° 38′ 31.95″ Longitude (WGS84). The Site is located on a relatively flat topographic area west of French Creek. An overall view of the area is shown on a copy of the Site Plan, a local street map, a topographic Map, a USDA Soils Map, as well as on a 2006 City of San Antonio aerial photograph with the shovel test locations plotted. Copies of the above mentioned maps indicating the location of the project area are presented on Plates 1 through 5.

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Geologic Map Review

The Site is located on the Austin Chalk (Kau) and Terrace alluvium (Qt) according to the Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle, revised 200. The Austin Chalk consists of grayish white to white microgranular chalk with minor Foraminifera tests and Inoceramus prisms. Medium gray alternating layers of marl and bentonitic seams occur locally. Pyrite nodules are common but quickly weather to limonite. Overall thickness ranges from 325 to 420 feet. The Terrace alluvium consists of gravel, sand, silt, and clay. The gravel is predominantly limestone, dolostone, and chert. These low terrace deposits are mostly above the flood level along entrenched streams.

U.S.D.A. Soil Survey Review

The United States Department of Agricultural (USDA) Natural Resources Conservation Service (NRCS) maintains an on-line Web Soil Survey for Bexar County, Texas. According to the Web Soil Survey the Site is located on the Eckrant cobbly clay (5 to 15 percent slopes), the Lewisville silty clay (1 to 3 percent slopes), and the Tinn and Frio soils (0 to 1 percent slopes).

The Eckrant Cobbly Clay is located on undulating uplands. Typically, the surface layer is about 13 inches thick. The upper part is dark grayish brown cobbly clay. The lower part is dark grayish brown cobbly clay. The underlying material is coarsely fractured indurated limestone. This soil is calcareous and moderately alkaline. The surface has about a 50 percent cover of fragments of limestone that are mostly 4 to 8 inches across. The soil is well drained. Permeability is moderately slow, and runoff is rapid. The available water capacity is very low.

The Lewisville Silty Clay consists of moderately deep, dark colored, nearly level alluvial soils. These soils occur mainly on terraces bordering the San Antonio and Medina Rivers and their main tributaries. The surface layer is very dark grayish brown to brown silty clay and is about 24 inches thick. It has fine subangular blocky or blocky structure, and is firm and crumbly when moist. This layer contains a few fine concretions of lime carbonate. The subsurface layer is brown silty clay and is about 20 inches thick. It has fine, subangular blocky or blocky structure and is very firm

but crumbly when moist. This layer is limy. The underlying material is reddish yellow silty clay. It has weak, blocky structure, is very firm when moist, and contains large amounts of lime. Beneath this layer there may be deep beds of water rounded limestone gravel. Lewisville soils have slow or medium surface drainage and medium internal drainage. Permeability is slow to moderate. The capacity to hold water is good. Natural fertility is high. The hazard of water erosion is serious on the more sloping parts but is very slight on the nearly level areas.

The Tinn Clay, Frequently Flooded is a nearly level soil on bottomlands. This soil is flooded several times each year for very brief periods. Areas are long and narrow and typically adjacent to streams. The upper layer is dark gray, calcareous, moderately alkaline clay about 58 inches thick. The layer below that to 77 inches is grayish brown, calcareous, moderately alkaline clay. The underlying layer to 80 inches is a mixture of gravel, sand, and clay. This soil is very slowly permeable and somewhat poorly drained. An apparent water table ranges from the surface to 3 feet below the surface late in winter and spring. The available water capacity is high. Floodwaters cause some scouring near the channel, but deposits on other parts of the flood plain offset these soil losses.

The Frio Silty Clay Loam consists of deep, calcareous soils on flood plains along major streams. This soil formed in silty clay alluvium underlain by gravel. In a representative profile, the surface layer, about 47 inches thick, is dark grayish brown. It is calcareous silty clay loam in the upper part and silty clay containing a few lime threads in the lower part. Below a depth of 47 inches is brown silty clay that contains soft masses of calcium carbonate. This soil is well drained and the permeability is moderately slow.

A copy of the Aerial Photograph from the U.S.D.A. Soil Survey of Nueces County, Texas indicating the location of the project site and the soil types is included in this report on Plate 4 in Appendix A.



Abstract

The Braundera YMCA has proposed new construction at their facility in northwest San Antonio, Texas. Because the property is owned by the City of San Antonio and managed by the City Parks and Recreation Department, an archaeological survey was required by the City of San Antonio Historic Preservation Office. Abasolo Archaeological Consultants, under contract to Frost Geosciences, carried out the necessary fieldwork on February 14, 2008. Based on a research design approved by Texas Antiquities Committee (under Permit #4811), an intensive surface survey was done, followed by the hand excavation of seven shovel tests in areas slated for subsurface modification. As a result of the study, no prehistoric or historic cultural resources were found. As a result, no further archaeological research is recommended.

Introduction and Background

Abasolo Archaeological Consultants (AAC) conducted Phase I archaeological investigations that included shovel testing in the locations of proposed construction at the Braundera Family YMCA facility in conjunction with Frost GeoSciences, for the City of San Antonio Parks and Recreation Department, and the YMCA of Greater San Antonio. Marmon Mok architects provided the planning for the proposed construction at the Site. Because the project Site is located on public property, the work was carried out in accordance with Texas Antiquities Permit number 4811. Following the "Archeological Survey Standards for Texas" the survey was designed to insure that no archaeological or historical resources eligible for nomination to the National Register of Historic Places or as a State Archeological Landmark are damaged or destroyed due to the planned construction. The Archeological fieldwork was conducted on February 14, 2008 by the Abasolo Archaeological Consultants and assisted by Brian Culver and Hugo Stolte IV of Frost GeoSciences. The proposed work specified in the Research Design and Scope of Work below was modified based on test pit findings during the course of the field work.



Setting

The Braundera YMCA facility is located within O. P. Schnabel Park (Plates 3 and 5), owned by the City of San Antonio. The park was created in 1964 as Bandera Road Park and encompasses 202 acres, the present park name was assigned in 1977. French Creek is located on the west side of the park (Plate 3). The creek, in this area, has a narrow, shallow channel that runs only after a rainfall event. On the eastern edge of the park property is Leon Creek, a major tributary of the San Antonio River.

Geologically, the project area lies mostly on the Austin Chalk of the Cretaceous era (Arnow 1959). On the surface of O.P. Schnabel Park, two major soil groups have been mapped (Taylor et al. 1991:25,30). These are the Lewisville series (LvB), associated with the French Creek drainage, and the Tarrant series (TaB), along a north-south ridge of eroded uplands between French and Leon Creeks. At the YMCA project area, Lewisville soils are found along the western edge near the creek and the Tarrant soils characterize the remainder of the area to the east. These soils, however, have been leveled, landscaped and across most of the survey area covered with a sandy loam fill material and sodded for use as athletic fields.

Archaeological Background

Local Chronology

The broad outline of the archaeology of northern Bexar County can be discerned. Major time periods and site types are briefly noted here.

The Paleoindian period, roughly 9,200 - 6,800 B.C., has distinctive chipped stone spear points used in hunting mammoth and other late Ice Age mammals. Other spear types appear with a shift to bison, deer and other game after the Pleistocene ended around 8,000 B.C. Known site types in northern Bexar County are campsites with flint-chipping debris from stone-tool making and repair. The Pavo Real site, of Clovis age (9,200 B.C.) was excavated near FM 1604 and Leon Creek (Collins et al. 2003). A later site, dating around 7,500 B.C., was investigated on the grounds of St. Mary's Hall on Salado Creek (Bousman et al. 2004). Most recently, Abasolo Archaeological Consultants have observed the excavations of the Southern Texas Archaeological Association at the Chandler site on Culebra Creek, yielding artifacts between 7,500-6,800 B.C.

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Sites of the following Archaic period are common in northern Bexar County. These peoples were hunters and gatherers as in the earlier Paleoindian period, but lived in an environment very similar to those of modern times. Projectile points used to tip spears (often erroneously called "arrowheads") change in shape through time, from 6,800 B.C. to 500 A.D. Archaeologists use these forms to recognize more specific time frames within the Archaic (e.g., Early, Middle and Late Archaic). In northern Bexar County, the most distinctive Archaic site is the burned rock midden. These large accumulations of fire-cracked limestone result from the use of earth-oven cooking starting around 3,000 B.C. (Black et al. 1997). Such features were usually part of campsites, with large amounts of flint debris from toolmaking; sometimes animal bone (dietary remains) and charcoal that can be used for radiocarbon dating. Other Archaic site types include lithic procurement areas (where flint cobbles, eroded out of the Edwards limestone, were processed), lithic scatters (lightly-used areas probably representing short-term hunting and gathering activities), and rarely sinkhole burials (Archaic peoples often disposed of their dead by placing them into sinkholes and caverns).

By 700 A.D., there began to be some changes in the long hunter-gatherer lifeway. The Late Prehistoric is first seen with the introduction of the bow and arrow. The stone arrow points are very small (mistakenly called "bird points"), but could be used in hunting game of any size. By 1,300 A.D., the economy emphasized buffalo-hunting. Most sites of this era include campsites, often in areas previously used by Archaic peoples; lithic scatters; and the lithic procurement areas of earlier times continued to be used.

During the Historic period, the best known archaeological remains are ranch and farm houses of cut stone, dating from the 1840s through the 1880s. An example is the Huebner-Onion Homestead, a 2-story stone structure built in 1862 located in what is now Leon Valley. Stacked-stone fences also occur. Such sites, including those without other surviving associated structures, are recognized from 19th century pottery fragments, artifacts of glass and metal, etc. Later Historic houses and farmsteads, through the early 1900s, are also found.

Local Chronology

The Leon Creek drainage was first surveyed for archaeological resources by Paul McGuff and William Fawcett in the late 1960s and early 1970; these sites are recorded at the Texas Archeological Research Laboratory (TARL) at The University of Texas at Austin (Texas Archeological Sites Atlas (TASA), Texas Historical Commission). Later work along Leon Creek was done at the Pavo Real site, noted above, once located south of FM1604 and dating to Paleoindian times. The Center for Archaeological Research (CAR) and The University of Texas at San Antonio (UTSA), have carried out a variety of studies in the Leon Creek drainage since the 1970s, most notable being the work of Tennis (1995) at sites on Leon Creek not far from the UTSA campus.

One site, 41BX56, was found by McGuff and Fawcett on the eastern margin of O.P. Schnabel Park. 41BX56 is a large open occupation site from which they recovered, during surface collection, Angostura, Nolan, and Bulverde points. In terms of the regional chronology described above, Angostura points date to the Late Paleoindian period, around 8,800 years ago (Turner and Hester 1993:73). Nolan and Bulverde points are later, around 4,500 years ago, in the early to middle part of the Archaic era. Just north of 41BX56 is a similar campsite also recorded by McGuff and Fawcett atop the bluffs on the west side of Leon Creek. 41BX56 yielded Archaic dart points and a possible Paleoindian specimen.

To the north of the Park and the YMCA facilities, avocational archaeologist David Calame, Sr., recorded site 4IBX1725, located in the Avalon housing development. There were no time-diagnostic artifacts found at the site and Calame describes the site as a "light lithic scatter" in "thin soils" (TASA). To the south, within the French Creek drainage, is 4IBX324, an undated campsite, and 4IBX370, the Stemen site, a campsite of Archaic age (also reported from the site was a plain brass guard for a sword of unknown Historic affiliation; Fox 1977; TASA).



Fieldwork

Research Design

Due to the depth of the proposed construction, backhoe testing and shovel tests were planned for the proposed pavilion, parking lot expansion, pool deck and pool, the areas planned for grading modifications, and the planned utilities. The proposed scope of work – to determine if cultural resources are present and, if present, assess the significance of the cultural resources—was submitted to the Texas Historical Commission.

- **TASK 1:** Excavate two shovel tests or one or more backhoe trenches, if deemed necessary and if feasible, in the location of the proposed pavilion foundation.
- TASK 2: Excavate two shovel tests or one or more backhoe trenches, if feasible, in the location of the proposed pool deck and pool.
- TASK 3: Excavate at least three shovel tests in the area of the proposed parking expansion.
- TASK 4: Excavate at least three shovel tests in the area to be modified for surface drainage.
- TASK 5: Excavate at least one shovel test in the area designated for buried utilities.
- TASK 6: Document any archaeological sites and isolated finds encountered in the survey by obtaining GPS coordinates on the location and plotting the resources on a project map.
- TASK 7: Provide interpretations of the survey findings and assess the significance of any archaeological sites encountered within the project area with regards to their potential for nomination to the National Register of Historic Places and as a Texas Archeological Landmark.

The on-site inspection showed that the entire area had been modified by the construction of park facilities such as soccer fields, baseball diamonds, concession stand (Figs. 2-4) and restrooms, all of which included the need to install buried utility lines. Underground utilities at the facility include, electrical to many standing lights for the ball park and soccer fields, buried irrigation and water lines, a CPS electrical line, and sewer line. For that reason, the YMCA staff asked that we forego backhoe trenching for safety purposes. This meant that our investigations were focused on the findings from shovel tests. Therefore, the proposed tasks had to be modified to meet the real conditions in the field.

The modified tasks include:

TASK A: A 100% pedestrian survey.

TASK B: Excavate shovel tests in each area to be impacted by construction as needed to determine a) the geological profile, and b) presence or absence of cultural material.

TASK C: Record the location and geological profile of each shovel test.

TASK D: Document any archaeological sites and isolated finds encountered in the survey by obtaining GPS coordinates on the location and plotting the resources on a project map.

TASK E: Provide interpretations of the survey findings and assess the significance of any archaeological sites encountered within the project area with regards to their potential for nomination to the National Register of Historic Places and as a Texas Archeological Landmark.

Survey Results

The entire area of the proposed construction site was walked to inspect for any evidence of prehistoric activity (burned rocks and/or chipped stone artifacts, such as flakes, points or tools) or historic cultural material (potsherds, metal objects or other materials in excess of 50 years of age). No artifacts of any sort were observed. The YMCA area has been extensively modified in past decades to construct soccer fields and baseball diamonds. The result of these activities is that much of the terrain has been leveled and, in addition, covered with fill material. The construction of buildings (Plate 5 and Figs. 1-4), landscaping, and drainages have left few areas of the YMCA facility undisturbed.

The next phase of the investigation was to plan a strategy for shovel testing. Shovel testing began in the proposed parking lot extension, near the creek just beyond the edge of the soccer field. The objective of this, and all other test pits, was to inspect the geologic deposits and look for traces of cultural material. Testing progressed northeastward away from the creek, toward the upland slope and the pool construction area. Test pits 1 through 4 were screened with a ¼-inch hardware cloth screen. Screening was abandoned for pits 5 through 7 due to the dense nature of the rocky clay soil.



The location of each test pit is shown in Figure 2 and a description of each is provided below.

TP-I: Location: About 10 meters east of the proposed parking lot just southwest of the new YMCA building. GPS: 0534692E / 3266976N. The profile is shown in Figure 8 and is described as follows:

0 to 10cm: some disturbance, intrusive sandy loam capping very dark gray clay, Munsell IOYR3/1.

10 to 30 cm: clay loam, a few Rabdotus shells, very dark grayish brown, Munsell 10YR3/2.

30 to 40 cm: clay loam; dark yellowish-brown, Munsell 10YR3/4.

Note: The soils in this test pit are Lewisville series. GPS Coordinates are UTM/NAD27

TP-2: Location: at the southeast edge of the parking lot next to French Creek. GPS 0534626E/3266955N.

The profile is shown in Figure 9 and is described as follows:

0 to 20 cm: Intrusive sandy loam.

20 to 30 cm; Clay loam, very dark grayish brown, Munsell 10R3/2.

30 to 40 cm: Clay loam, dark brown, Munsell 10YR3/3.

40 cm +: Clay loam, dark yellowish brown (IOYR3/4).

Note: The soils in this test pit are Lewisville. GPS Coordinates are UTM/NAD27

TP-3: Location: Pavilion site. GPS 0534717E / 3267116N. The profile is shown in Figure 10 and is described as follows:

0 to 10cm: Grass and root topsoil.

10 to 30: Dark brown clay heavily mixed with limestone nodules, Munsell 10YR4/3.

30+: dense consolidated limestone nodules.

Note: The soils in this test are of the Tarrant series. GPS Coordinates are UTM/NAD27



TP-4: Location: Sidewalk construction area east of pavilion. GPS 0534732E / 3267105N. The profile is shown in Figure 11 and is described as follows:

0 to 20 cm: Dark brown clay and limestone gravel, Munsell 10YR4/3.

20 to 30 cm: dense dark brown clay with small gravel, Munsell 7.5YR4/4.

30 to 35 cm +: dense calcareous gravel.

Note: The soils in this test are of the Tarrant series. GPS Coordinates are UTM/NAD27

TP-5: Location: In the proposed utility trench north of the pavilion. GPS 0534696E / 3267174N. The profile is shown in Figure 12 and is described as follows:

0 to 20 cm: Brown sandy loam fill, intrusive.

20 to 35 cm: Dense brown clay and limestone, Munsell 7.5YR4/4.

35 cm +: dense calcareous gravel (cf ST-4).

Note: This location was modified by previous construction which added the sandy loam fill. The deeper soils belong to the Tarrant series. GPS Coordinates are UTM/NAD27

TP-6: Location: in left field of the existing ball park, and in the pool site. GPS 0534705EN / 3267090N. The profile is shown in Figures 13 and 14, and is described as follows:

0 to 18 cm: Sandy loam fill, intrusive.

18 to 40 cm: brown dense clay with gravel, Munsell 10R4/4.

40 cm +: dense calcareous gravel, very hard.

Note: The soils beneath the intrusive fill are of the Tarrant series. GPS Coordinates are UTM/

TP-7: Located at the edge of the drainage ditch that borders the outside of the existing ball park, and

within the pool area. GPS 0534727E / 3267074N. The profile is shown in Figure 15 and is described as

follows:

0 to 25 cm: brown clay, Munsell 7.5YR4/4.

25 to 33 cm: brown clay with limestone nodules, Munsell 7.5YR4/6.

33 to 40 cm+: dense rock with some clay matrix, Munsell 7.5YR4/6.

Note: These soils are of the Tarrant series.

Shovel Test Summary

The shovel testing failed to reveal any evidence of buried archaeological deposits. Our tests showed

that intrusive fill consisting of a brown sandy loam was brought in to the facility, covering the existing

soccer field and baseball field. In the proposed pool area the fill reaches a depth of nearly 20 cm and

covers a dense clay soil heavily mixed with limestone. These naturally deeper soils belong to the

Tarrant series where buried archaeological deposits are not generally expected. Lewisville soils were

encountered beneath the sandy loam fill material near the proposed parking lot extension. These are

deeper soils, however some disturbance was encountered in the uppermost level of TP-1. While these

soils could contain buried cultural deposits, no traces were found in either TP-1 or TP-2 which were

located nearest to the creek. Considering the fact that French Creek is prone to flood, the surface was

encountered beneath the introduced mantle in ST-2 either appeared to have been scoured or scraped,

probably the latter.

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Summary and Recommendations

A pedestrian survey coupled with the excavation of seven shovel tests found no evidence of prehistoric

or historic sites located within in the proposed Braundera YMCA construction site. The entire area was

walked to search for any evidence of prehistoric activity or historic cultural material. None was found.

Seven shovel tests were excavated to inspect the soil profiles and any traces of past occupations or

activities. Surface inspection of a drainage ditch profile near the ball park and other vertical exposures

provided by open deep post holes used to install electrical poles in the soccer field also failed to yield

any evidence of past occupations. The tests showed that in the project area the soil mantle is shallow

and overlies a consolidated colluvial deposit composed largely of limestone pebbles and gravels. This

surface appears to have been scoured to the extent that no definable A-horizon soil existed over the

area away from the creek. Intrusive fill consisting of a fine loamy soil was placed over the original

surface when the soccer and baseball fields were constructed some time in the recent past. This

intrusive fill measured 20 to 25 cm thick in the construction areas. The topography slopes upward

toward the northeast from the creek, and the topsoil was very shallow and rocky in the northeast

portion of the proposed construction site beyond the baseball field.

Given the results of the pedestrian survey and shovel testing; it is apparent that no cultural resources

will be impacted by the Braundera YMCA expansion. Therefore, no further archaeological work is

recommended.

Acknowledgments

Abasolo Archaeological Consultants would like to thank Shawn Bacon of Mormon Mok Architects for

their assistance in the planning and execution of the field work and the Braundera YMCA Staff for their

cooperation. We also would like to acknowledge Debra Beene of the Texas Historical Commission for

her prompt response in providing the Antiquities Permit for the archaeological survey.

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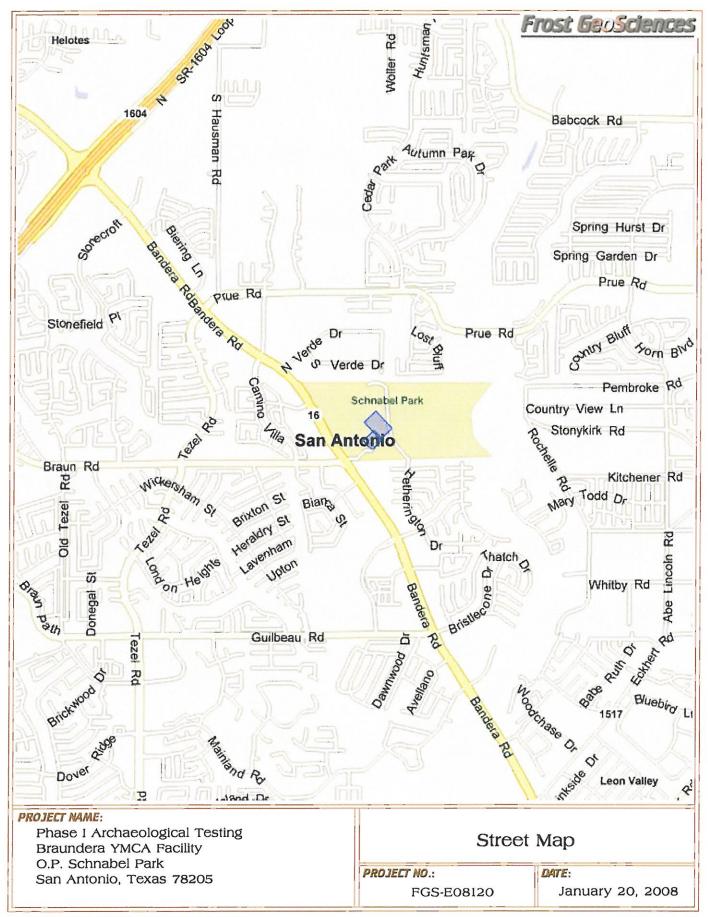
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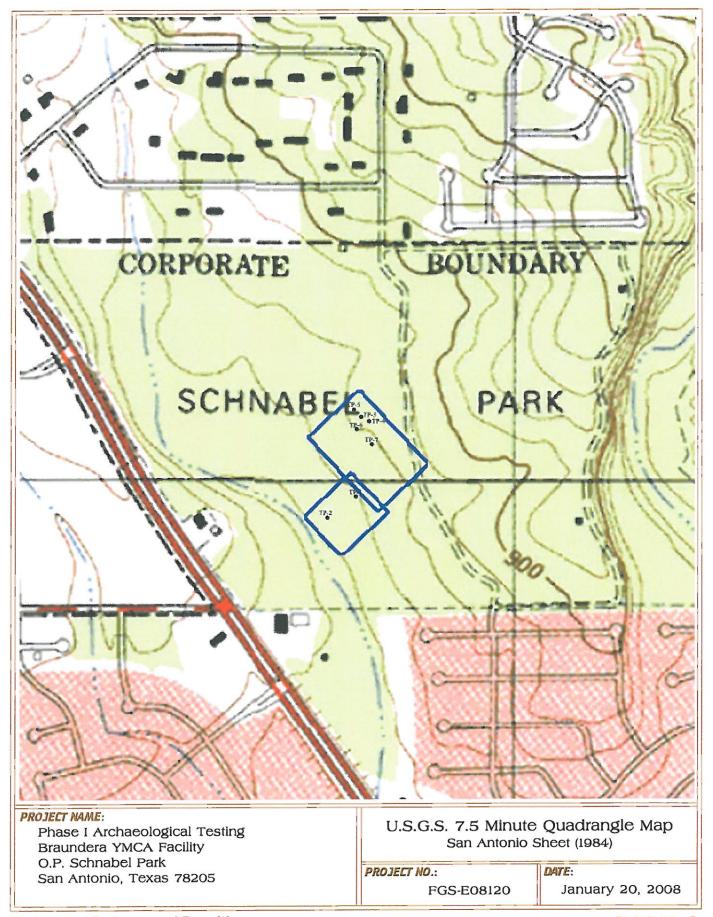
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Figures



Figure 1. View of the newly constructed Wellness Center at the Braundera Family YMCA facility.



Figure 2. View looking south at new construction facilities and the proposed parking lot in the background.



Figure 3. View looking north toward the proposed location of the pool and pavilion.

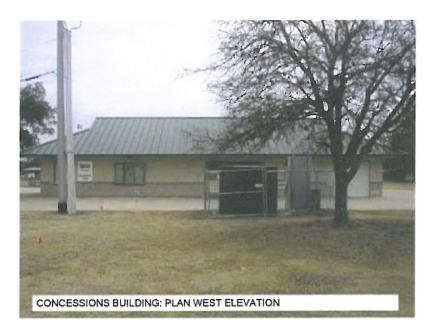


Figure 4. Concession building at the existing ball park that is to be demolished with the grade improvement associated with the construction of the swimming pool (image provided by Frost GeoSciences).



Figure 5. Excavating Test Pit No. 1. Tom Hester (left) and Brian Culver (right) conducting the testing.



Figure 6. Test Pit No. 1 profile; note the 20 cm of fill dirt overlying the Lewisville soil.



Figure 7. Test Pit No. 2 profile showing the thick intrusive sandy loam topsoil



Figure 8. Test Pit No. 3 profile showing the Tarrant series soils.



Figure 9. Test Pit No. 4 profile; note the dense limestone gravel.



Figure 10. Test Pit No. 5 profile; note the thickness of the introduced sandy loam fill.



Figure 11. Test Pit No. 6 in ballpark, view looking south.



Figure 12. Test Pit No. 6 showing the depth of the intrusive sandy loam fill.



Figure 13. Test Pit No. 7 profile showing the Tarrant series soils and limestone.